IDEA-0264-68
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24 April 1968

MEMORANDUM FOR : Chairman, U-2R Requirements Review Board

SUBJECT : ECP U-2R-12, Static Test Stretch Program

1. The subject ECP was discussed in detail with LAC engineers to determine specifically what advantages would accrue from performing the outlined work. As a result of this discussion, the following comments and recommendations are offered:

A. Extend V_H from 150 to 160 KEAS - LAC stated that satisfactory completion of this item would permit the climb speed to be increased from 150 KEAS to 160 KEAS which would increase the rate of climb 7% and result in a 100 pound reduction in climb fuel. The 100 pounds of additional cruise fuel would equate to approximately 30 N.M. additional range. On the basis of the performance gains above, the effort hardly seems warranted. Additionally, however, the U-2R handbook climb speed (and also the U-2C) is a constant 160 KIAS to M = .72. This converts to 157.5 KEAS at sea level and 150 KEAS at 50,000 feet altitude. This suggests that if the U-2R aircraft is being climbed in accordance with the handbook, it is routinely operated above the specification maximum high speed V_H = 150 KEAS, a flight environment very well defined since all U-2C's climb at 160 KIAS. The need for this item of the stretch program, therefore, seems somewhat doubtful.

B. Investigate horizontal tail and aft fuselage adequacy for inadvertent overspeed pull-up, i.e., 2.5G at V_L (shifted) above 260 KEAS - The design limit speed (V_L) of the U-2R is 260 KEAS in the shifted configuration. The recently completed static test program demonstrated the structural integrity of the aircraft to loads equal to 50% more than what would be imposed at 260 KEAS. However, LAC maintains it is possible for the aircraft to inadvertently get into a nose down condition resulting in exceeding V_L = 260 KEAS and

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requiring pull-up to reduce speed. The objective of this particular investigation is to determine if, with relatively minor beef-up, increase in rivet size, change from rivets to screws, etc., in certain isolated locations, the aircraft may be able to withstand ultimate loads corresponding to higher speeds. (LAC mentioned 280 KEAS.) Obviously this test would be to destruction. Furthermore, it is not intended to increase V_L beyond 260 KEAS but only to have the added strength insurance if it can be achieved with minor effort or hardware changes. This item is therefore recommended for approval by the Board subject to concurrence by D/O that the overspeed condition is a realistic possibility.

C. Investigate various conditions involving wing mounted stores - LAC has recommended deletion of this item until the characteristics of particular stores are defined. The undersigned concurs in this recommendation.

2. As a result of the discussions with LAC, ECP-U-2R-12 is to be resubmitted with item 3 deleted and an appropriate reduction in cost. It is recommended that D/O evaluate the possibility of an inadvertent overspeed condition as stated above, and if in agreement, the Board approve this effort. It is further recommended that the Board not approve the increase of V_H from 150 KEAS to 160 KEAS.

SIGNED

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Distribution:
orig - D/M/OSA
2 - D/O/OSA
3 - CMD/Compt/OSA
4 - IDEA/O/OSA
5 - SAS/O/OSA
6 - D/R&D/OSA
7 - ASD/R&D/OSA
8 - ASD/R&D/OSA (Chrono)
9 - RB/OSA

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